Installation and operating instructions

TOUCH1200

Version: V1.20140409

30322537-02-EN

Read and follow these operating instructions.

Keep these operating instructions in a safe place for later reference.

Company details

Document

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1 For your safety

1.1 Basic safety instructions

Please read the following safety instructions carefully before using the product for the first time.

- Do not operate the terminal while driving in road traffic. Come to a standstill in order to use the unit.
- Before servicing or repairing the tractor, always disconnect the connection between the tractor and the terminal.
- Before charging the tractor battery, always disconnect the connection between the tractor and the terminal.
- Before welding on the tractor or implement, always disconnect the power supply to the terminal.
- Do not make any unauthorized modifications to the product. Unauthorized modifications or use may impair safety and reduce the service life or operability of the unit. Modifications are considered unauthorized if they are not described in the product documentation.
- Follow all recognized safety, industrial and medical rules as well as all road traffic laws.
- This product contains no repairable parts. Do not open the casing.
- Read the operating instructions to the agricultural device which you want to control by using the product.

Terminals with GSM modem

If the terminal is fitted with a built-in GSM modem, this will emit radio waves when it is switched on. These can interfere with other equipment or be harmful to human health.

You should therefore follow the instructions below when the terminal is fitted with a GSM modem:

- If you wear a medical device, ask your doctor or the device manufacturer how to proceed in order to prevent risks. Medical devices such as pacemakers or hearing aids may be sensitive to the radio signal of the built-in GSM modem.
- If you wear a pacemaker, keep the terminal away from the pacemaker.
- Switch off the terminal as soon as you are close to a petrol station, chemical plant, biogas plant or any other location where combustible gases or fumes may be present. These gases can be ignited by a spark and explode.
- Always maintain a distance of at least 20 cm (8 inches) between the GSM antenna and your body.
- Never switch the terminal on in an aircraft. Make sure that it is not accidentally switched on during flight.
- Never connect the terminal by means of a power supply to the mains network. Only ever use the vehicle battery.

1.2 Intended use

The terminal is used to operate agricultural machinery equipped with ISOBUS job computers.

Intended use also includes compliance with the conditions for operation and repairs prescribed by the manufacturer.

The manufacturer cannot be held liable for any personal injury or property damage resulting from such non-compliance. All risk arising from improper use lies with the user.

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All applicable accident prevention regulations and all other generally recognized safety, industrial, and medical standards as well as all road traffic laws must be observed. Any unauthorized modifications made to the equipment will void the manufacturer's warranty.

1.3 Layout and meaning of warnings

All safety instructions found in these Operating Instructions are composed in accordance with the following pattern:

⚠ WARNING

This signal word identifies medium-risk hazards, which could potentially cause death or serious physical injury, if not avoided.

⚠ CAUTION

This signal word identifies low-risk hazards, which could potentially cause minor or moderate physical injury or damage to property, if not avoided.

NOTICE

This signal word identifies actions which could lead to operational malfunctions if performed incorrectly.
These actions require that you operate in a precise and cautious manner in order to produce optimum work results.

There are some actions that need to be performed in several steps. If there is a risk involved in carrying out any of these steps, a safety warning will appear in the instructions themselves.

Safety instructions always directly precede the step involving risk and can be identified by their bold font type and a signal word.

Example

1. NOTICE! This is a notice. It warns that there is a risk involved in the next step.
2. Step involving risk.

1.4 Disposal

When it has reached the end of its service life, please dispose of this product as electronic scrap in accordance with all applicable waste management laws.

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1.5 Instructions on retrofitting

Instructions on how to retrofit electrical and electronic farm equipment and/or components

Agricultural equipment used today features electronic components and parts whose function can be affected by other farm equipment which emits electromagnetic waves. Such effects could lead to personnel being put in danger, if the following safety instructions are not adhered to.

Selecting components

When selecting components, make sure first of all that the retrofitted electrical and electronic components comply with the current version of the EMC Directive 2004/108/EC and carry the CE marking.

User responsibility

When retrofitting a machine with electrical and electronic farm equipment and/or components connected to the vehicle's electrical system, it is your own responsibility to check whether the installation causes interference with the vehicle's electronic system or other components. This applies, in particular, to the electronic control of:

- electronic hitch control (EHR),
- front linkage,
- power take off (PTO),
- engine,
- gear.

Additional requirements

The following requirements must be met in order to retrofit mobile communication systems (e.g. radio, phone):

- All farm equipment must be approved and installed in accordance with the regulations applicable in the respective country.
- The equipment must be installed as a fixed installation.
- The operation of portable or mobile farm equipment in the interior of the vehicle is only permitted via a connection to a permanently installed exterior antenna.
- The transmitting part must be spatially separated from the vehicle's electronic system.
- When attaching the antenna, pay attention to proper installation, including a sound ground connection between the antenna and the vehicle's ground wire.

For information on wiring and installation as well as the maximum allowable current consumption, please also refer to the installation guide provided by the machine manufacturer.

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2 About these Operating Instructions

2.1 Target group of these Operating Instructions

These Operating Instructions are intended for personnel entrusted with installing and operating the terminal.

2.2 Layout of operating instructions

The operating instructions explain step by step how you can perform certain operations with the product.

We use the following symbols throughout these Operating Instructions to identify different operating instructions:

Type of depiction	Meaning
1. 2.	Actions that must be performed in succession.
⇨	Result of the action. This will happen when you perform an action.
⇨	Result of an operating instruction. This will happen when you have completed all steps.
☑	Requirements. In the event that any requirements have been specified, these must be met before an action can be performed.

2.3 Layout of references

If any references are given in these Operating Instructions, they will appear as:

Example of a reference: [➞ 9]

References can be identified by their square brackets and an arrow. The number following the arrow shows you on what page the chapter starts where you can find further information.

2.4 Directional information in these instructions

All directional information in these instructions, such as "left", "right", "forward", "back", is relative to the movement direction of the vehicle.

2.5 Current version

The current version of these instructions can be found on our website: www.mueller-elektronik.de.

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3 Product description

3.1 Scope of delivery

The following items are included in delivery:

- TouchME terminal
- VESA holder and screws
- Bracket for mounting the terminal
- USB memory device
- Installation and Operating Instructions

3.2 Terminal buttons

You will find a number of buttons on the housing of the terminal, which you can use to operate the terminal.

Terminal buttons

1	Buttons on the front site	2	Buttons on the rear site The buttons on the rear side do not have any function.

Function of the buttons

	Switches the terminal on and off.
	Creates screenshots. [→ 42]
	Saves the window layout [→ 27].
	No function
	No function
	No function
	No function

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3.3 Terminal ports

Overview of the ports

1	GSM port for: - GSM antenna	ETH	ETH port M12 port for: - Ethernet
A	Port A CAN-Bus port for: - ISOBUS basic equipment	D	Port D Port for: - analog camera
B	Port B See section: Pin assignment of port B	E	Port E Port for: - analog camera
C	Port C RS232 serial port for: - GPS receiver - Terrain Compensation "GPS TILT-Module" - LightBar	2	USB port for: - USB memory device

3.4 Applications on the terminal

The terminal is delivered with a range of installed application (apps). Most of these can be used immediately. Some applications you can only test for a limited period of time. If you like a specific application, you can order a license from Müller-Elektronik and unlock the full version of the application.

Full versions

The full versions of the following applications are installed on the terminal:

- ISOBUS interface (ISOBUS-UT)
  The terminal enables you to operate ISOBUS job computers which are ISO 11783 compliant. The user interfaces for operating a job computer are shown on the terminal screen if this is connected to the ISOBUS connector of the vehicle.
  The ISOBUS interface has no icon of its own. The icon for the connected job computer will always be displayed in the selection menu.
- - Service application.
  The Service application allows you to:
  - Configure the terminal.
  - Enable and disable other applications.
  - Enter license activation codes.
  - Enable drivers for connected devices.
  - Configure the GPS settings.

- - ISOBUS-TC application.
  The ISOBUS-TC application (task controller) provides an interface between a Farm Management Information System (FMIS), the terminal and the ISOBUS job computer. ISOBUS-TC allows you to use the terminal to process ISO-XML files with planned task data from your PC based FMIS. If you do not have an FMIS, you can setup and process tasks on the terminal.
  The ISOBUS-TC application complies with Part 10 of Standard ISO11783.
- - Tractor-ECU application.
  The Tractor-ECU application is used to record all settings around the tractor.
  This allows you to:
  - Input the position of the GPS receiver.
  - Set the GPS receiver as the speed signal source.
- - File Server application
  This application is used to define a save location on the terminal. This save location can be used by all ISOBUS implements which do not have their own USB interface.
- - Serial Interface application
  This application enables a data exchange between the terminal and an on-board computer via the serial interface. In this way, you can also use the GPS signal for machines which are not ISOBUS-compatible. You can transfer target rates to the on-board computer or switch sections. The data is sent using the LH5000 or ASD protocols.
  If you want to use the ASD protocol, you must activate the "ASD-Protocol" license.
- - Camera.
  The Camera application displays on the screen the image from the camera which is connected to the terminal.

Test versions

You can use the test versions of the following applications:

- - TRACK-Leader application with SECTION-Control and further modules.
  The TRACK-Leader application enables you to process exact parallel swaths in the field.
  Additional modules in the application handle the following tasks:
  - Automatic section control in order to minimize overlaps.
  - Automatic vehicle steering in the field.
  - Transfer target rates from a prescription map to the ISOBUS job computer.
- - FIELD-Nav application.
  FIELD-Nav is a navigation system for agricultural applications. This enables you to find your way to any field.
  You will find the operating instructions on the Müller-Elektronik website.

3.5 Correctly interpreting information on the nameplate

On the back of the terminal you will find a nameplate sticker. On this sticker you can find all the information you need to definitively identify the product.

Have these details ready when you contact Customer Services.

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Nameplate on the back of the terminal

1	Customer number If the product was manufactured for an agricultural machinery manufacturer, the agricultural machinery manufacturer's item number will be shown here.	4	Operating voltage The product may only be connected to voltages within this range.
2	Hardware version	5	Software version If you update the software, this version will no longer be up-to-date.
3	Müller-Elektronik item number	6	Serial number

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4 Mounting and installation

4.1 Mounting the terminal in the vehicle cab

You can install the terminal in portrait or landscape format.

	⚠ CAUTION
	Damage due to weak mounting The terminal is very heavy. This can damage the bracket, and can even fall to the ground and become damaged. This can distract the driver and cause an accident. ◦ Ensure that the materials which you have used during assembly are sufficiently robust. ◦ Use installation materials from Müller-Elektronik only. ◦ Ensure that the terminal is firmly mounted.

Procedure

☑ You have disconnected all cable connections on your terminal.

☑ You have the VESA bracket assembly kit to hand.

1. Screw the bracket together.
2. Secure the bracket with the four screws on the back side of the terminal.
3. Secure the terminal in the vehicle cab. You can for example use the ME mounting bracket for this. This is included in the scope of delivery of the ISOBUS-basic equipment.

⇨ Your terminal should be mounted as follows:

4. Check that your terminal is firmly mounted.

⇨ You can now connect cables to the terminal. [➞ 11]

4.2 Connecting the terminal to the ISOBUS

In order to be able to operate an ISOBUS job computer with the terminal, you must connect this to the ISOBUS.

You will need a different connection cable for this, depending on the model of your tractor.

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- In tractors which have been subsequently upgraded with an ISOBUS-basic vehicle harness from Müller-Elektronik, use connector cable A from the ISOBUS-basic vehicle harness.
- In tractors which are equipped as standard with ISOBUS and which have an ISOBUS In Cab Connector, you will need the following connector cable:
  - D-Sub <-> CPC connector cable, item no. 30322541

- In tractors which are fitted with their own ISOBUS terminal, but in which there is however no ISOBUS In Cab Connector, you can ask for the ISOBUS In Cab Connector to be retrofitted.
  - You can order the appropriate cable from Müller-Elektronik. Our sales team will be glad to advise you.
  - For certain tractors, you can retrofit the connector cable without the ISOBUS In Cab Connector.
  - In certain versions, you will also require the D-Sub <-> CPC connector cable, item no. 30322541

When there is more than one terminal in the tractor cab, you may need to change certain settings in order to enable two-way communication. Find out more: Using two terminals [➞ 31]

Procedure

1. Connect the 9-pin plug A of the basic vehicle harness to the CAN port of the terminal.
2. Tighten the safety screws on the connector.

4.3 Mounting the GSM antenna

The GSM antenna transmits information to the farmpilot portal via a mobile phone network.

⚠ WARNING

Electromagnetic waves
These can interfere with other equipment. This also affects medical devices such as pacemakers and hearing aids.

- Mount the GSM antenna at least 1 meter away from other devices.
- Mount the GSM antenna in such a way that there is always a distance of at least 20 cm between the driver and the GSM antenna.

NOTICE

Electromagnetic waves
Damage to the terminal

- Glue the GSM antenna from the inside onto a window pane so that its emissions are directed outward. Never glue the unit to the terminal or other electronic components.

☑ The terminal has a GSM connector.

☑ The vehicle and the terminal are switched off.

1. Screw the cable of the GSM antenna to the GSM connector of the terminal.

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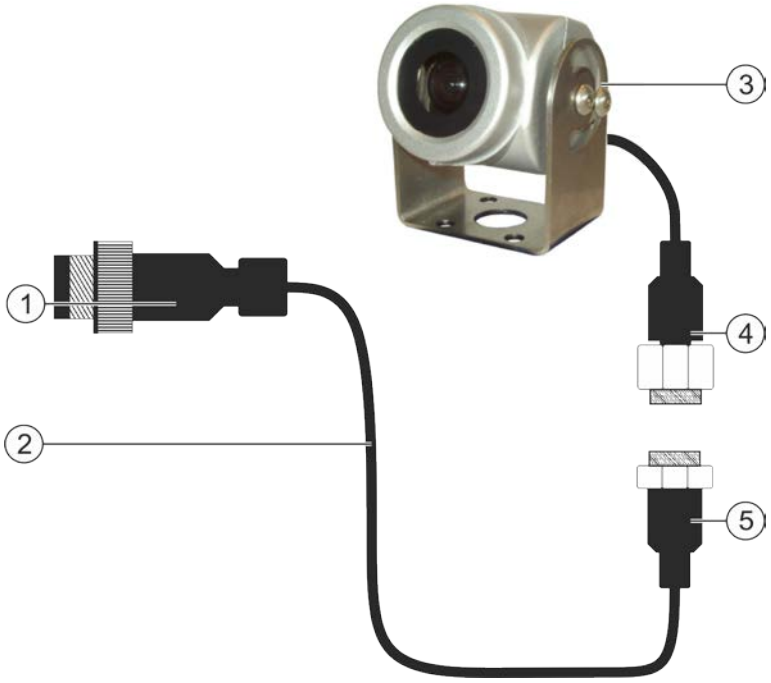
2. NOTICE! Once glued to the disk, the GSM antenna cannot be removed from the window pane without destroying the adhesive layer. If you also want to use the GSM antenna in a second vehicle, stick a piece of Velcro between the GSM antenna and the window pane. Otherwise, mount a separate GSM antenna in each vehicle.
3. Remove the adhesive film from the rear of the GSM antenna.
4. Stick the GSM antenna to the inner side of the window pane on the vehicle cab. The antenna must be glued at least 20 cm (8 in.) away from the driver and 1 meter from other devices.

4.4 Connecting the camera to the terminal

4.4.1 Connecting the camera HQ



Camera HQ - Connecting to Touch1200

1	Connector for connection to the terminal. Connection D	3	Camera HQ
2	Extension cable	4	Camera plug
		5	Connection to the camera connector

Procedure

1. Screw the camera together with its bracket, as described in the assembly instructions of the camera manufacturer.
2. Connect the camera to the extension cable.
3. CAUTION! When laying out the extension cable, ensure that no kinks form, and that no one can trip over the laid-out cable.
4. Connect the extension cable to connection D of the terminal.
5. Secure the camera.
6. Activate the camera. [→ 44]

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4.4.2 Connecting the camera NQ

Camera with adapter cable

1	Connector for connection to the terminal. Connection D	4	Camera
2	Connection to the adapter cable	5	Camera plug
3	Connection to the extension cable	6	Connection to the camera connector

Procedure

1. Connect the cables to each other as shown in the figure. Pay attention to cable lengths when doing so.
2. CAUTION! When laying out the cable, ensure that no kinks form in the cable, and that no one can trip over the laid-out cable.
3. Lay out the cable. Ensure that the cable reaches the terminal and is not damaged during operation.
4. Secure the cable with the provided cable ties.
5. Secure the camera. Use the white cardboard drilling template from the quick start guide for this purpose.
6. Connect the camera to the terminal. Use connector D to do this.
7. Activate the camera. [➞ 44]
8. When disconnecting the cable from the terminal, use the enclosed rubber gasket to seal the exposed connector.

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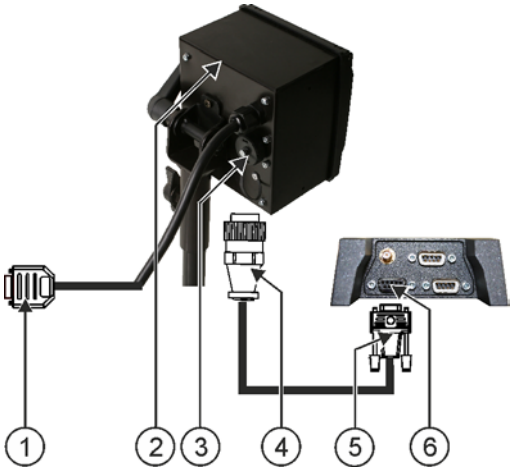
4.5 Connecting the ISO printer to the terminal

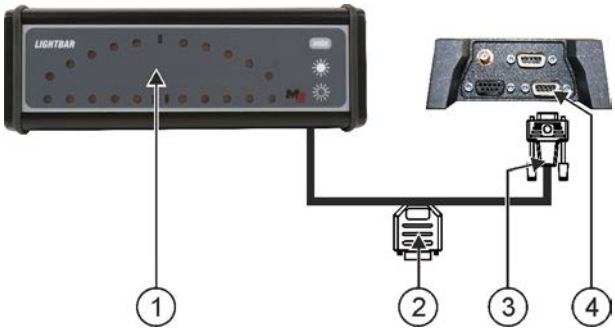
The ISO printer is used to print out information from an ISO-XML task.



1	9-pin Sub-D plug for connection to ISOBUS	4	Plug for connection to ISO printer socket
2	ISO printer	5	Plug for connection to the terminal
3	ISO printer socket	6	CAN-Bus connection

After connecting the ISO printer to the terminal, you must activate it. [→ 44]

4.6 Connecting the external LightBar to the terminal



1	External LightBar	3	Plug for connection to the terminal
2	Plug for connecting a GPS receiver	4	Serial port RS232

After connecting the external LightBar to the terminal, you must activate it. [→ 45]

4.7 Connecting the on-board computer to the terminal

You can connect a range of on-board computers (non-ISO computers), which communicate using the LH5000 protocol or the ASD interface, to the terminal.

An appropriate connector cable for each on-board computer which can be connected is available from Müller-Elektronik. Our sales team will be glad to advise you.

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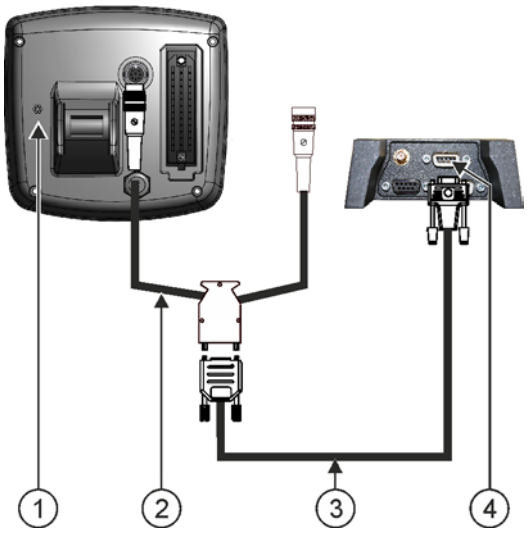

1	On-board computer	3	Null modem cable
2	Adapter cable* Available as a set with Cable 3, item number: 3032254800	4	Connector B of the terminal

*When using an Amatron3 or Amatron+ as the on-board computer, you will only need a traditional null modem cable.

4.8 Connecting the GPS receiver to the terminal

Find out how to connect a GPS receiver from Müller-Elektronik to the terminal from the operating instructions for the GPS receiver.

When mounting the terminal in a vehicle which is already fitted with a GPS receiver and another ISOBUS terminal, you must:

- connect the GPS signal to the terminal from Müller-Elektronik.
- configure the GPS receiver.

Procedure

To connect the terminal to a GPS receiver which is already installed on the vehicle:

1. First of all find out how you can direct the signal from the GPS receiver to the terminal. This can differ for every vehicle or GPS receiver: Vehicles can be fitted with a GPS socket in the cab, a GPS receiver with a serial output or serial outputs to the ISOBUS terminal.
2. Check what cable you will use to connect GPS signal to the serial socket on the terminal from Müller-Elektronik.
3. Connect the GPS signal to the serial socket of the terminal from Müller-Elektronik.
4. Configure the GPS receiver so that it can communicate with the terminal from Müller-Elektronik. You can find the necessary specifications for this in the table below.
5. Activate the "Standard" GPS driver on the terminal.

Configuration

Frequencies	5 Hz (GPGGA, GPVTG)
	1 Hz (GPGSA, GPZDA)

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Transmission rate	19200 baud
Data bits	8
Parity	no
Stop bits	1
Flow control	None

4.9 Inserting the Micro-SD card

If your terminal is not equipped with a Micro-SD card, you can insert the card manually. You can only use Micro-SD-format cards.

Procedure

Insert an SD card as follows:

1. Switch off the terminal and disconnect all cable connections.
2. - Unscrew the cover on the rear of the terminal.
3. - Release the bracket for the SIM card, by gently sliding it in the direction of the arrow.
4. - Lift the bracket for the SIM card upwards.
5. - Release the bracket for the SD card, by gently sliding it in the direction of the arrow.
6. - Lift the bracket for the SD card upwards.

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7. - Insert the SD card.
8. - Fold the bracket for the SD card down, and lock it in position.
9. - Fold the bracket for the SIM card down, and lock it in position.
10. - Screw the cover onto the rear of the terminal.

⇨ You have inserted the SD card.

4.10 Inserting the SIM card

The terminal must be equipped with a SIM card so that you can use the farmpilot portal. If you do not intend to use the farmpilot portal, you will not need any SIM card.

Which SIM card?

You must purchase the SIM card from your mobile phone provider.

Select a mobile phone provider that can guarantee good mobile phone reception on your fields. A good connection is required in order for your work with the farmpilot portal to run smoothly.

The SIM card must meet the following requirements:

- It must be GPRS-capable.
- It must be PIN-free. Inform your mobile phone provider about this requirement before purchasing the SIM card.
- The contract must enable data transfer.

Procedure

Insert the SIM card as follows:

1. Switch off the terminal and disconnect all cable connections.
2. - Unscrew the cover on the rear of the terminal.

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3. - Release the bracket for the SIM card, by gently sliding it in the direction of the arrow.
4. - Lift the bracket for the SIM card upwards.
5. - Insert the SIM card.
6. - Fold the bracket down, and lock it in position.
7. - Screw the cover onto the rear of the terminal.

⇨ You have inserted the SIM card.

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5 Basic control principles

5.1 Initial start-up

You must at least perform the following settings during initial startup:

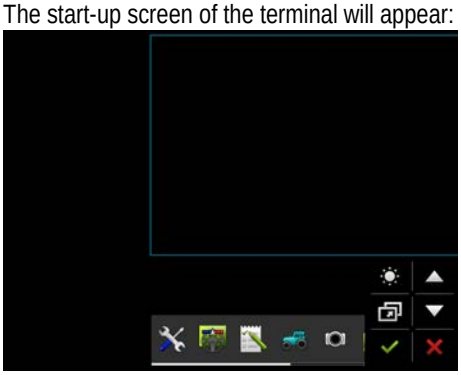
- Change the language [➞ 32].
- Configure the "Work with ISO-XML?" parameter in the ISOBUS-TC application. [➞ 50]
- Configure the GPS receiver. [➞ 37]
- Enter the position of the GPS receiver. [➞ 48]

Procedure

To switch on the terminal:

☑ The terminal is installed and connected to the ISOBUS-basic equipment.

1. Press the button and hold this down for approx. 3 seconds.
   ⇨ The terminal will beep briefly.
   ⇨ The terminal screen remains dark for approx. 10 seconds until the applications are loaded in the background.
   ⇨ The start-up screen of the terminal will appear:



⇨ You have now started the terminal.

5.2 Switching off the terminal

Procedure

To switch off the terminal:

1. Press the button and hold this down for approx. 3 seconds.
   ⇨ You have now switched off the terminal.

5.3 Terminal screen layout

Depending on the layout you are using [➞ 32], the areas of the screen will be arranged differently.

The examples in this and in the following chapters show the layout in landscape format:

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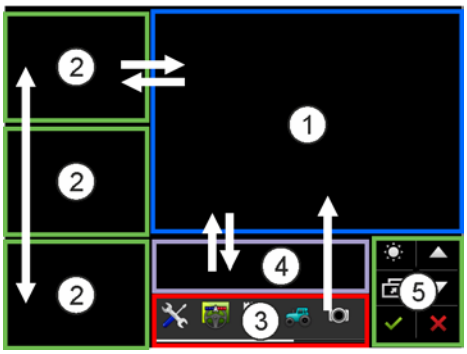

Terminal screen layout

1	Main window This area enables you to operate applications. Touching the terminal screen in the "Main window" area will actuate the function whose icon you have touched. The operation is dependent on the applications which are open.	4	ME header In this area, ISOBUS job computers from Müller-Elektronik can display summary information on the status of the agricultural machine. The area can also be used as an additional window.
2	Additional window In the three lateral, superimposed additional windows, you can allow applications to be displayed which you want to see but do not want to use.	5	System icons See the table below.
3	Selection menu You can open applications in the "Selection menu" area.		

System icons

Icon	Meaning
	Changes the brightness for day and night.
	Changes the arrangement of the applications in the windows.
	Has no function in this area. When this icon appears in other areas, it is used for confirmation purposes.
	Has no function.
	Has no function.
	Has no function in this area. When this icon appears in other areas, it is used for cancellation or deletion purposes.

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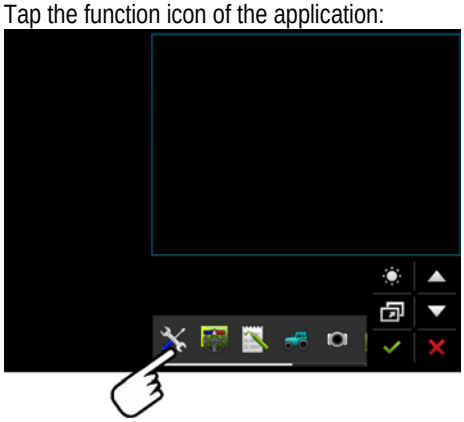
5.4 Opening applications

An application opens when it appears in the main window or in an additional window.

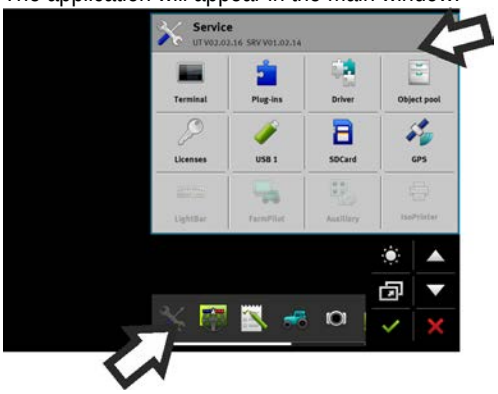
Procedure

To open an application:

1. Find the function icon for the desired application in the selection menu area. For example, the icon:
2. Tap the function icon of the application:



⇨ The application will appear in the main window:



⇨ The function icon for the application in the selection menu now appears darker. This tells you that this application is already open. You will not be able to open this from the selection menu anymore.

⇨ If another application was previously open in the main window, this will be moved to the next free additional window.

5.5 Moving an application

You can move any application from the main window to one of the additional windows or to the ME-Header.

Procedure

To move an application from the main window to an additional window:

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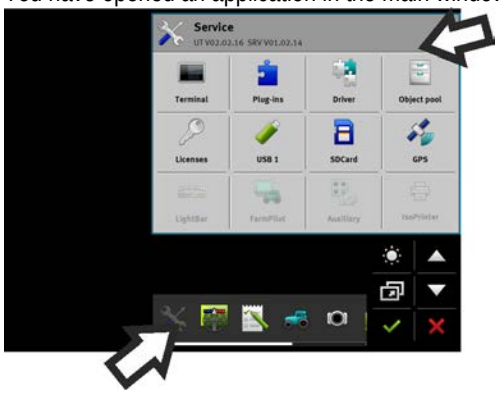
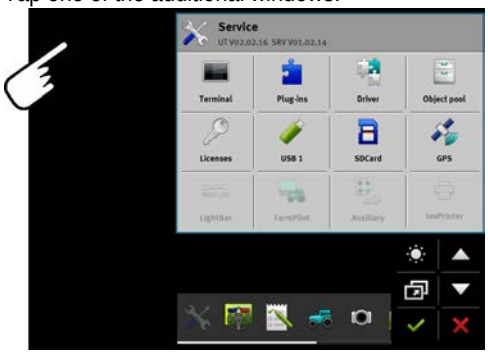
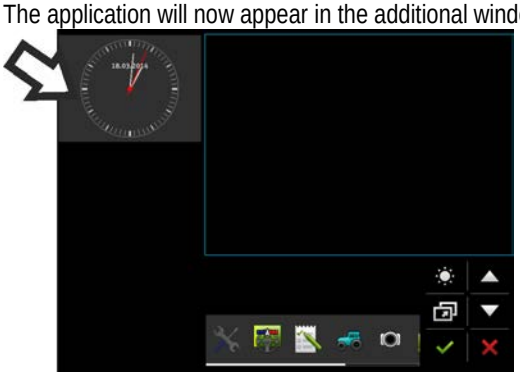
☑ You have opened an application in the main window. For example, the Service application:



1. Tap one of the additional windows:

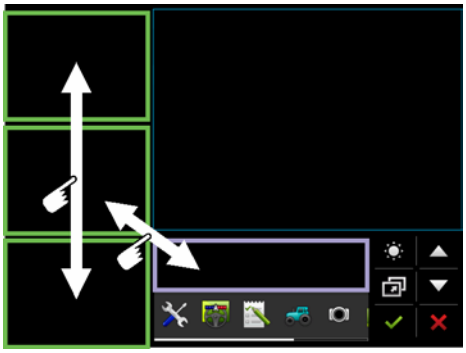


⇨ The application will now appear in the additional window:



2. Tap the additional window of the application.
   ⇨ The application will once again appear in the main window.

5.6 Moving open applications



You can move applications between additional windows and the ME-Header.

Procedure To move an application between additional windows:

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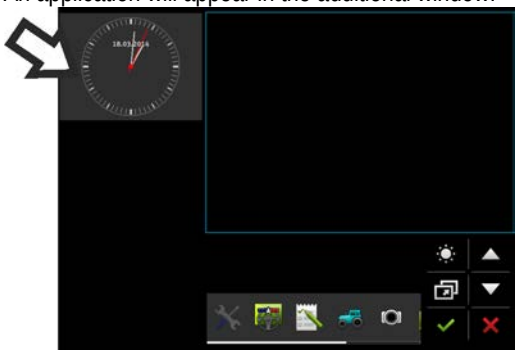
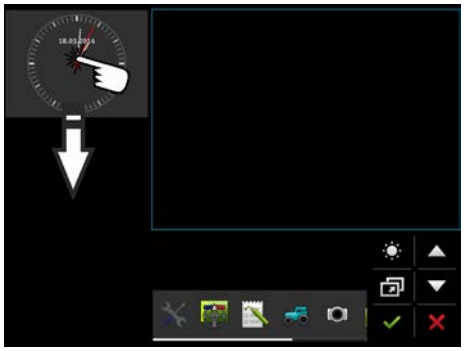
☑ An application will appear in the additional window:



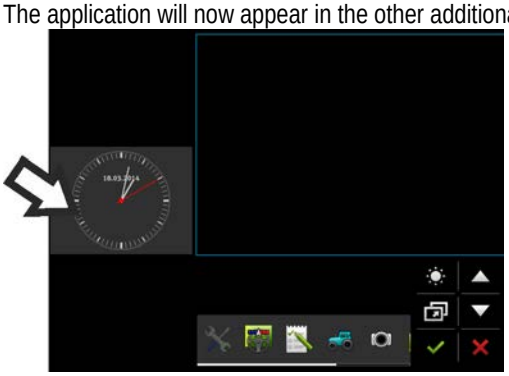
1. Use your index finger to move the image of the application downwards. You must touch the terminal screen the entire time:



⇨ The additional window in which the application will then be displayed is marked in green.

2. Move your finger away from the terminal screen.

⇨ The application will now appear in the other additional window:



5.7 Saving and loading window arrangements

You can save and load the arrangement of the applications in the windows.

Procedure To save the arrangement:

1. Hold the button pressed down until the terminal beeps twice.

⇨ The arrangement will be saved.

Procedure To load a saved arrangement:

1. Press the button briefly:

⇨ The arrangement will be loaded.

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5.8 Hiding an application

If you do not have enough space on the terminal screen to open new applications, you can hide an application. The application will not be shut down, but will instead continue to run in the background.

Procedure

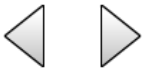
To hide an application:

1. Open the application in the additional window.
2. Move the application to the selection menu.

5.9 Using the keyboard

In order to enable you to also write numbers or text on the terminal, a keyboard will appear on the terminal screen whenever this is necessary.

Major icons

Icon	Meaning
12# Abc	Changes the buttons on the keyboard.
	Deletes a character.
	Moves the cursor.
	Saves the input.
	Cancels the input.
	Switches between upper and lower case letters.

Keyboard for inputting text and numbers.

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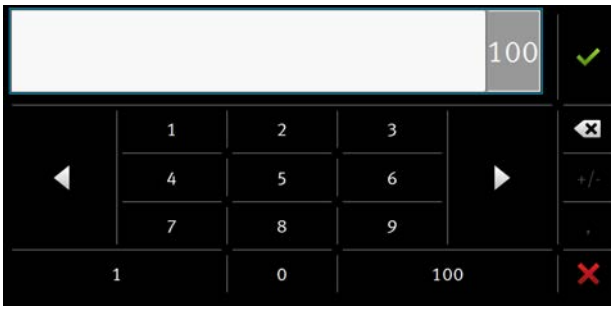

Keyboard for inputting text.

5.10 Using a memory device

The terminal can work with two kinds of memory device:

1. With a built-in Micro-SD card. If the terminal is equipped with a Micro-SD card, this will be used as storage for most applications.
   The USB memory device is used for the following purposes:
   - For data transmission [➞ 29]
   - For saving screenshots
   - For working with shp files in the TRACK-Leader application.
2. With no Micro-SD card and with an inserted USB memory device. If the SD card is not recognized, the terminal will save all data directly onto the USB memory device. If this is faulty or disconnected, the data may be lost. For this reason, this procedure is not recommended.

As of March 2014, all new terminals will be fitted with Micro-SD cards. In terminals which were bought earlier, you should insert a Micro-SD card [➞ 20] when you update the software. Once the card is inserted, the "SDCard" interface will appear in the "Service" application.

farmpilot

If you use the farmpilot portal, do not use a USB memory device, but only the SD card.

5.10.1 Using a SD card

The terminal's applications save most of their data [➞ 29] directly onto the SD card.

In order to exchange data between the terminal and a PC, you will need to proceed differently for each application. You can find out more about this in the instructions for each application.

Here is an overview of the directories on the USB memory device: Directories on the USB memory device [➞ 29]

5.10.2 Directories on the USB memory device

As soon as you insert the USB memory device into the terminal, various directories will be created on the terminal. You will need to set up other directories by yourself.

Each directory may only contain certain data, so that the applications on the terminal can use this data.

- "ApplicationMaps"
  - Files: Prescription maps in .shp format.

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  - Purpose: TRACK-Leader. For use with "VARIABLE RATE-Control".
- "FIELDNav"
  - Files: .iio, .data
  - Purpose: Map material will be saved in this directory.
  - The directory will be created when the FIELD-Nav license is activated.
- "GIS"
  - Files: Field data, such as field boundaries, in the following formats: .shp, .dbf, .shx.
  - Purpose: TRACK-Leader. Export and import for GIS.
- "NgStore"
  - Files: .iio, .data
  - Purpose: TRACK-Leader. Standard directory for saved routes and fields.
- "Screencopy"
  - Files: .bmp
  - Purpose: Screenshots are saved here.
  - The terminal will create this directory automatically when the "Screenshot" parameter is activated in the "Terminal" menu and you create a screenshot.
- "Taskdata"
  - Files: .xml
  - Purpose: The directory may only contain XML files which originate from an ISO-XML compatible FMIS. The ISOBUS-TC application accesses this data.
  - You must create this directory yourself.
- "GPS"
  - Files: .txt
  - Purpose: GPS positions are saved in a file in the directory. This will enable Customer Service to reconstruct the traveled distance.
  - The directory will be created if you activate the "Record and save data" parameter. [➞ 41]
- "fileserver"
  - Files: All file formats are acceptable.
  - Purpose: Files which are to be imported or exported in the File Server application are saved in this directory.
- "PTR"
  - Files: .txt
  - Purpose: Copies of tasks printed on the ISO printer are saved in this directory.

5.10.3 Displaying the content of the memory device on the terminal

You can view the content of the memory device directly on the terminal.

Procedure

1. Insert the memory device (USB memory device or SD card) into the terminal.

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2. Open the "Service" application.
3. Tap on "USB 1" or on "SDCard".

⇨ The content of the USB memory device will be displayed.

⇨ The content of the SD card can be found in the "ME-TERMINAL" folder.

5.11 Using two terminals

When installing the terminal in a tractor in which there is already another terminal, you must configure both terminals so that communication works between both units.

The following table will tell you which settings you need to configure, and the chapters in which these are described.

Parameter	Chapter
ISOBUS-UT: Function instance	Basic terminal settings [➙ 34]
Login as ISOBUS-UT	Basic terminal settings [➙ 34]
Transferring offsets	Setting the GPS receiver parameters [➙ 48]
Configuring the list of connection	Configuring the list of connection [➙ 51]

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6 Configuring the terminal in the Service application

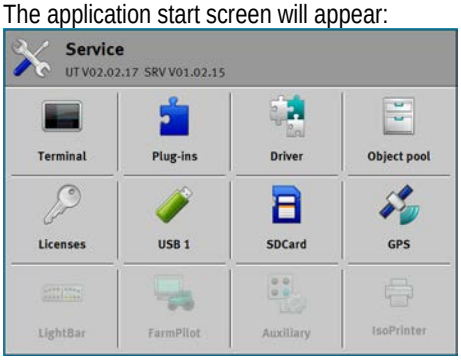
6.1 Changing the language

When you switch on the terminal for the first time, the text may appear in a foreign language (in German).

If you change the language in the Service application, you also change the language for all applications and the ISOBUS job computer.

If a connected ISOBUS job computer cannot activate the selected language, a standard language will be activated.

Procedure

1. - Open the Service application.
   ⇨ The application start screen will appear:
   

2. Tap "Terminal".
   ⇨ A list of parameters will appear.
3. Slide your finger over the terminal screen from the bottom to the top.
   ⇨ New parameters appear.
4. Tap "Language".
   ⇨ A list of abbreviations of available languages will appear.
5. Tap the abbreviation for your language.
   ⇨ The abbreviation is marked with a green dot.
6. - Confirm.
   ⇨ The "Terminal" screen will appear.
7. Restart the terminal.

6.2 Changing the layout

The terminal is configured by default for working in landscape format. You can however change this after installation.

You can choose between the two following layouts:

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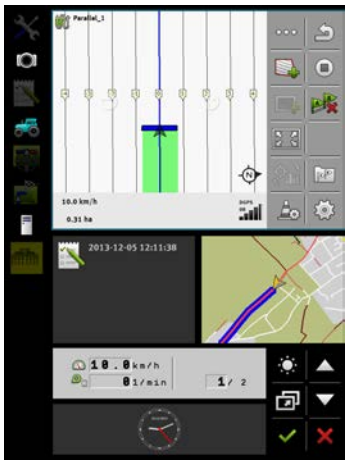
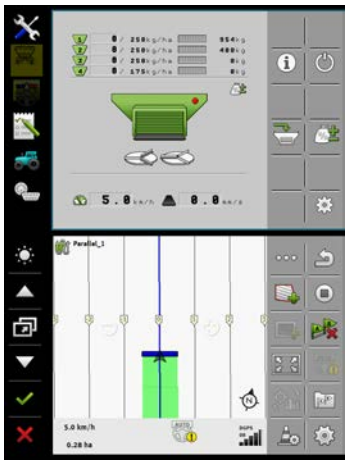
Landscape format



Portrait format



Duo-ISO

Procedure

1. - Open the Service application.
   ⇨ The application start screen will appear:

2. Tap "Terminal".

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⇨ A list of parameters appears.

3. Slide your finger over the terminal screen from the bottom to the top.
   ⇨ New parameters appear.
4. Tap "Layout".
   ⇨ A list of the available layouts appears.
5. Tap on the desired layout.
   ⇨ The layout is marked with a green dot.
6. - Press to confirm.
   ⇨ The "Terminal" screen will appear.
7. Restart the terminal.

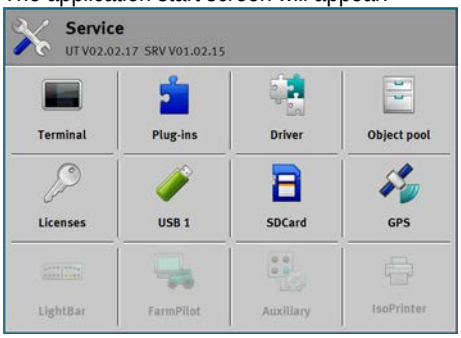
6.3 Basic terminal settings

The basic settings include: Language, Time, Measurement units.

All settings which you make here will also apply to other applications and in connected ISOBUS job computers.

Procedure

1. - Open the Service application.
   ⇨ The application start screen will appear:



2. Tap "Terminal".
   ⇨ A list of parameters will appear. See the table below.
3. To change the value of any of the parameters, tap the desired parameter.
   ⇨ A window will appear, into which you can input the value of the parameter as a number, or select from a list.
4. - Confirm.
5. Restart the terminal.

Parameters in the "Terminal" menu

Parameter name	Function
Brightness Day	Brightness of the terminal screen during the day.
Brightness Night	Brightness of the terminal screen at night.
Keyboard brightness	Lighting of the buttons.

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Parameter name	Function
Volume	Volume of the terminal.
Date	Current date.
Time	Current time.
Time zone	Time difference in relation to GMT.
Language	Language of the applications on the terminal screen.
Measurement units	Measurement system.
Screenshot	When this parameter is activated, you can create screenshots on the terminal.
Layout	Layout of the terminal.
ISOBUS-UT: Function instance	Use this parameter if you want the ISOBUS interface to assign a specific "Function instance". This will enable you to set the terminal which you want to connect to an ISOBUS job computer.
Login as ISOBUS-UT	Activate this parameter if you want the ISOBUS job computer to be displayed on the terminal. This parameter must be activated in most instances. On very few self-propelled agricultural machines, the parameter must be deactivated.
Number of navigation buttons	The terminal provides a maximum of 12 function icons in each application. When you connect to the terminal an ISOBUS job computer which has more functions in a single screen, their function icons are distributed on multiple pages. Furthermore, navigation buttons appear, with which it is possible to flip to the next page. The number indicates how many buttons can be used to flip between multiple pages with function icons.

6.4 Activating and deactivating applications

In the "Service" application you can activate and deactivate other applications that are installed on the terminal.

The applications are installed in packages, in so-called plugins. A plugin can contain several applications.

You can for example deactivate a plugin if you do not want to use it. The plugin will then not be displayed in the selection menu.

Name of the plug-in	Includes the following applications
TRACK-Leader	TRACK-Leader SECTION-Control

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Name of the plug-in	Includes the following applications
	TRACK-Leader TOP VARIABLE RATE-Control
ISOBUS-TC	ISOBUS-TC
Tractor-ECU	Tractor-ECU
Camera	The terminal screen will show the image from the connected camera.
FIELD-Nav	FIELD-Nav
File Server	File Server
Serial Interface	Serial interface for the transfer of data to the on-board computer.

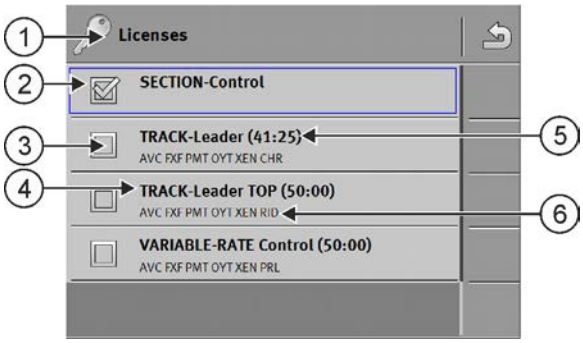
Procedure

To activate and deactivate plug-ins:

1. - Open the Service application.
2. Tap "Plug-ins".
   ⇨ The "Plug-ins" screen will appear.
3. To activate or disable a plug-in, tap it.
   ⇨ A plug-in is activated when a checkmarker appears in front of its name.
4. Restart the terminal.

6.5 Unlocking licenses for full versions

Several applications are pre-installed on the terminal, which you can use for trial purposes for up to 50 hours. After this time has elapsed, they will be automatically deactivated.



"Licenses" screen

1	Screen name	4	Name of the application
2	Unlocked applications are marked with check marks.	5	You can see how long you can still use a test version in the brackets: in hours and minutes.
3	Un-checked applications are locked.	6	18-digit alphabetical code of the application

You will need an activation key to unlock a license. To receive this, you will need to purchase a license from Müller-Elektronik.

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If you request the activation key by phone or by email, you will be required to give our staff the following information:

- The name of the application for which you require a license.
- The 18-digit alphabetical code of the application. You will find this on the "Licenses" screen.
- Serial number of the terminal – Found on the nameplate on the reverse of the terminal.
- Item number of the terminal – Found on the nameplate on the reverse of the terminal.

Procedure

To unlock a license:

1. - Open the Service application.
2. Tap "Licenses".
3. Order an activation key from Müller-Elektronik using the 18-digit alphabetical code.
4. Tap the name of the license that you want to unlock.
   ⇨ The keyboard will appear.
5. Enter the activation key.
6. - Confirm.
   ⇨ The "Licenses" screen will appear.
7. Restart the terminal.

⇨ The full version of the application is now unlocked.

6.6 GPS receiver

When you connect a GPS receiver to the terminal, you must activate and configure it.

6.6.1 Activating the GPS receiver

In order to enable the GPS receiver, you must first select the driver for the connected receiver.

A driver is a small program that controls connected device. The drivers for the devices supplied by Müller-Elektronik are pre-installed on the terminal.

Available drivers

Driver name	GPS receiver
deactivated	No GPS receiver is connected.
PSR CAN	Select this driver if the GPS receiver is connected to the job computer PSR. The signals are transferred via the CAN cable to the terminal. The receiver will be directly configured in the PSR application.
A100, A101	Driver for the Müller-Elektronik A100 and A101 GPS receivers. Connected to the serial interface.
Standard	Driver for unknown GPS receivers. Connected to the serial interface. This driver is activated by default. The connected GPS receiver

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Driver name	GPS receiver
	cannot thus be configured.
AG-STAR, SMART-6L	Driver for the Müller-Elektronik AG-STAR and SMART-6L GPS receivers. Connected to the serial interface.

CAUTION

Incorrect driver
Damage to the GPS receiver.

- Before connecting a GPS receiver to the terminal, you must always activate the appropriate driver.

Procedure

To activate the driver:

1. - Open the Service application.
2. Tap "Driver".
3. Tap "GPS".
   ⇨ The installed drivers will appear.
4. Tap the appropriate driver.
5. - Confirm.
6. Restart the terminal.

6.6.2 Configuring the GPS receiver

The internal software for each GPS receiver must be configured. You can configure the following GPS receivers from Müller-Elektronik via the terminal:

- A100, A101
- AG-STAR, SMART-6L

All other GPS receivers must be configured in accordance with the manufacturer's instructions.

Function icon	Meaning
	Reads the configuration of the GPS receiver.
	Resets the manufacturer's default settings.
	Opens the license menu. [➞ 40] Only appears for a SMART-6L DGPS/Glonass receiver, for entering a RTK license.

Procedure

☑ The GPS receiver is connected to the terminal.

☑ The GPS receiver is connected directly to the terminal. Additional devices such as a LightBar or tilt module may **not** be connected in between.

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☑ The correct driver is activated.

1. - Open the Service application.
2. Tap "GPS".
   ⇨ The "Settings" screen will appear.
   ⇨ The following message will appear during initial configuration: "GPS receiver identified. Read the configuration?"
3. To confirm, tap "Yes". To cancel, tap "No".
   ⇨ The terminal reads the current configuration of the GPS receiver.

⇨ You can now see all of the configurable parameters.

Parameters for the GPS receiver

Baud rate

Only appears when the "Standard" driver is selected.

Setting for the speed at which the terminal sends data to the DGPS receiver. The parameter sets the baud rate for the terminal.

Satellite 1 and Satellite 2

Satellite 1 – primary DGPS satellite. The DGPS receiver will connect to this satellite in the first instance.

Satellite 2 – secondary DGPS satellite. The DGPS receiver will only connect to this satellite in the event that the primary satellite fails.

Your satellite selection will depend on which satellite currently has the best availability in your region.

Potential values:

- "Auto"
  The software automatically selects the current best satellite. This setting is not recommended, as it slows down the start-up of the DGPS receiver.
- Name of the satellite. Which satellites are shown here is dependent on the driver and correction signal that you have activated.

Steering

This parameter activates the "Automatic steering" assistance function in the GPS receiver.

If you want to connect your existing GPS receiver to a steering job computer, you have to configure the "Steering" parameter.

Correction signal

Type of correction signal for the DGPS receiver.

The correction signals which are available is dependent on the activated driver.

Potential values:

- For the "A100, A101" driver:
  - "WAAS/EGNOS"

    Correction signal for Europe, North America, Russia and Japan.
  - "E-DIF"

    Internal calculation of correction data.

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Only functions with a special version of the A100 DGPS receiver, item no. 30302464. This receiver is no longer sold by Müller-Elektronik.

- For the "AG-STAR, SMART-6L" driver
  When a AG-STAR DGPS/Glonass receiver is connected:
  - "EGNOS-EU"
  - "WAAS-US"
  - "MSAS-JP"
  - "EGNOS-EU + GL1DE"
  - "WAAS-US + GL1DE"
  - "MSAS-JP + GL1DE"
  - "GPS/Glonass GL1DE 1"
  - "GPS/Glonass GL1DE 2"

  When an SMART-6L DGPS/Glonass receiver is connected:
  - EGNOS/WAAS
  - GL1DE
  - RTK radio (RTK license required [→ 40])
  - RTK GSM (RTK license required [→ 40])

Correction signal format

Format of correction signal for the SMART-6L DGPS/Glonass receiver.

Only appears when "RTK radio" or "RTK GSM" correction signals have been selected.

Potential values:
- RTCM V3
- CMR/CMR+
- RTCA

For the correction signal format which you must select, please refer to your correction service.

Terrain compensation

The GPS TILT-Module terrain compensation is configured using this parameter.

You can order the terrain compensation from Müller-Elektronik with the following item number: 30302495.

RTK license for SMART-6L

You will need a SMART-6L DGPS/Glonass receiver and RTK license in order to work with RTK correction signals.

You have obtained the RTK license from Müller-Elektronik. You must order a license code for this and enter this into the terminal.

Procedure

1. - Open the Service application.
2. Tap "GPS".
   ⇨ The "Settings" screen will appear.

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3. - Open the license menu.
4. Tap "License code".
   ⇨ The "License menu" screen will appear.
   ⇨ You can see the serial number and firmware version on the screen. You will need these when ordering the license code.
5. Enter the license code.
6. - Press to confirm.

6.6.3 Recording GPS positions

Certain faults can require the recording of communications between the GPS receiver and the terminal.

Procedure

☑ A USB memory device is inserted into the terminal.

1. - Open the Service application.
2. Tap "GPS".
3. Tap "GPS-Data".
   ⇨ The "GPS-Data" screen will appear.
4. Scroll down.
5. Tap "Trace-Data".
   ⇨ The "Trace-Data" screen will appear.
6. Scroll down.
7. Checkmark the "Record and save data" button.
   ⇨ The terminal will immediately begin to record the data. This will be saved in the "GPS" directory on the USB memory device.
   ⇨ The function will be deactivated following any restart.

6.7 Configuring the "GPS TILT-Module" terrain compensation

Procedure

☑ The "GPS TILT-Module" terrain compensation is connected.

☑ The tractor is positioned on an even ground surface.

☑ The driver of the external LightBar is deactivated.

☑ The external LightBar is not connected.

1. Measure the distance between the GPS receiver and the ground on which the tractor is positioned.
2. Switch on the terminal.
3. - Open the Service application.
4. Tap "GPS".
   ⇨ The "Settings" screen will appear.
5. Scroll down until the "Terrain Compensation" parameter appears on the terminal screen.

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6. Tap "Tilt module".
7. In the line "GPS receiver height", insert the measured distance.
8. Tap .
   ⇨ Message: "Tilt module will be configured." is displayed.
9. To confirm, tap "Yes".
   ⇨ The position of the terrain compensation on an even surface is being calibrated.

⇨ After calibration, the angle 0 will appear in the line "Tilt". The displayed angle will change with any tilt of the tractor.

6.8 Creating screenshots

A screenshot is a photo of the screen being displayed.

Procedure

1. Insert a USB memory device into the terminal.
2. - Open the Service application.
3. Tap "Terminal".
4. Set the "Screenshot" parameter to "Activated".
5. To set up a screenshot, tap the button .
   ⇨ The content of the terminal screen will be saved as image files on the USB memory device in the "Screencopy" directory.

6.9 Deleting pools

Pools are the intermediate storage for the terminal. Pools are used to temporarily store graphics or text. Over time, the pools will become too large and slow down the operation of the terminal.

You can delete the pools to speed up the terminal's operation.

When to delete?

Delete the pools:

- After updating the software of a connected job computer.
- If the terminal operates more slowly than usual.
- When asked to do so by Customer Services.

Procedure

To delete the pools:

1. - Open the Service application.
2. Tap "Object pool".
   ⇨ A list with the ISO names of ISOBUS job computers will appear, whose graphics and text can be found in the storage of the terminal. You can determine from the icon which farm implement is being controlled by the job computer.
3. Tap the object pool which you want to delete.
4. - Delete the object pool.
   ⇨ Nothing happens if you delete the wrong object pool.
   ⇨ The following message will appear: "Do you want to delete the directory?"

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5. To confirm, tap "Yes".
6. The current pool of the job computer will be loaded after the next restart.

6.10 Configuring the joystick button allocations

The terminal offers you the possibility of assigning the functions of a ISOBUS job computer to the buttons of the joystick.

Procedure

To activate the driver for this function:

☑ The joystick and ISOBUS job computer are connected and both support the Auxiliary 2 protocol.

1. - Open the Service application.
2. Tap "Driver".
3. Tap "Auxiliary".
4. Mark "Auxiliary2".
5. - Confirm.
6. Restart the terminal.

Procedure

To configure the button assignment:

☑ You have activated the driver "Auxiliary2"

1. - Open the Service application.
2. Tap "Auxiliary".
3. Tap "Auxiliary Editor".
   ⇨ If the ISOBUS job computer supports the Auxiliary 2 protocol, a list will appear of the job computer functions.
   ⇨ If no list appears, the ISOBUS job computer does not support this protocol.
4. Tap the function which you want to assign to this button on the joystick.
   ⇨ A list of the buttons on the joystick will appear.
5. Select the button to which the selected function should be assigned.
6. - Confirm.
   ⇨ A list of assignments will appear.
7. Restart the terminal.
   ⇨ After restarting, the following notification will appear on the main terminal screen: "Confirm the assignments." This notification will appear after any restart.
8. "OK" - acknowledge the notification.
   ⇨ A list of recognized assignments will appear on the terminal screen.
9. - Confirm the assignments.

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6.11 Camera

6.11.1 Activating a camera

In order to activate a camera, you must activate the "Camera_ME" plug-in.

Procedure

1. - Open the Service application.
2. Tap "Plug-ins".
3. Tap "Camera".
   ⇨ The plug-in is marked with a green tick.
4. Restart the terminal.
   ⇨ After restarting, the icon for the camera application will appear in the selection menu.
5. - Open the Camera application.

6.11.2 Operating the camera

Function icon	Meaning
	Mirrors the image horizontally.
	Mirrors the image vertically.

☑ You have connected and activated the camera.

1. - Open the Camera application.
   ⇨ The filmed image will appear in the main window.
2. Tap on the main window.
   ⇨ Function icons will appear on the side for 10 seconds, with which you can actuate the camera.

6.12 Activating the ISO printer

In order to activate the ISO printer, you must activate its driver.

Procedure

1. - Open the Service application.
2. Tap "Driver".
3. Tap "ISOPrinter".
   ⇨ The installed drivers will appear.
4. Tap "ISO Printer".
5. - Press to confirm.

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6. Restart the terminal.

6.13 Activating an external LightBar

If you connected an external LightBar to the terminal, you must activate it.

To activate the external LightBar, you must first activate its driver.

You can order the external LightBar from Müller Elektronik with the following item number: 30302490.

Procedure

1. - Open the Service application.
2. Tap "Driver".
3. Tap "LightBar".
   ⇨ The installed drivers will appear.
4. Tap "Lightbar".
5. - Press to confirm.
6. Restart the terminal.

6.14 Configuring farmpilot

farmpilot is an internet portal which allows software on a farm computer to exchange data with machines via a mobile phone network. Operating data are stored in a central location on the portal and are presented clearly to the user.

In order to be able to use the farmpilot portal with your terminal, you must perform the following steps:

- Purchase a SIM card and have it activated,
- Connect a GSM antenna,
- Activate farmpilot,
- Enter your farmpilot access data.

Refer to the following chapters to learn how to perform these steps.

6.14.1 Activating farmpilot

To activate farmpilot on your terminal, you must first activate its driver.

NOTICE
High costs from prolonged data transfer If you do not have a flatrate in your mobile phone contract, continuous use of farmpilot can lead to high costs. If your flatrate has a data volume limit, continuous use of farmpilot can quickly use up your data volume limit. ◦ Deactivate the farmpilot driver when you are not using the portal.

Procedure

1. - Open the Service application.
2. Tap "Driver".
3. Tap "farmpilot".

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⇨ The installed drivers will appear.

4. Tap "farmpilot".
5. - Press to confirm.
6. Restart the terminal.

You must now enter the access data for the farmpilot portal.

6.14.2 Configuring the connection with farmpilot

Before you can connect the terminal to farmpilot, you must configure the connection.

You will receive this data when purchasing the farmpilot access data.

Procedure

1. - Open the Service application.
2. Tap "FarmPilot".
   ⇨ Configurable parameters will appear.
3. Configure the connection.

Parameter

You will require the following parameters for the configuration:

Server

Server address

The server address cannot be altered.

Username

Username for farmpilot.

Password

Password for farmpilot.

Modem

Modem type:

- "Internal" – Installed in the terminal housing as standard.
- "External" – External modem, connected to the terminal.

Provider

Opens a screen where the GPRS connection can be configured.

With most mobile phone providers, this configuration occurs automatically.

If the access data for the GPRS connection differ with your provider, you can configure the connection manually.

You can find precise instructions in the chapter:

Configuring the GPRS connection manually [➞ 47]

Diagnostics

A number of parameters, which are used to diagnose faults. Customer service may ask for the values displayed here in the event of problems.

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6.14.3 Configuring the GPRS connection manually

In this chapter you will learn how to configure the GPRS connection manually.

With most SIM cards, the GPRS connection will be configured automatically.

The GPRS connection must be manually configured in the following instances:

- You have bought a new SIM card. The terminal does not recognize your mobile phone provider.
- Your mobile phone provider has altered the access data for the GPRS connection.

Parameter

The values you must enter for the parameters depend on your mobile phone provider. You can obtain these data from your mobile phone provider.

You will require the following parameters for the configuration:

Country

Country for which the SIM card is configured. Cannot be altered.

Provider

Name of the mobile phone provider. Appears automatically.

With unrecognized cards, you can enter the name of the mobile phone provider yourself.

APN

Abbreviation of "Access Point Name“.

Address of the GPRS access point.

DNS 1 and DNS 2

Abbreviation of "Domain Name System“.

IP addresses of the first and second DNS servers

Username

Username for the GPRS connection.

Password

Password for the GPRS connection.

Procedure

You can configure the mobile connection as follows:

☑ You have inserted the SIM card.

☑ You have activated the farmpilot portal.

1. - Open the Service application.
2. Tap "FarmPilot".
3. Tap "Provider".
4. Configure the connection.

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7 Tractor-ECU application

The Tractor-ECU application is used to compile all of the information on the vehicle on which the terminal is mounted. Tractor-ECU can transfer this information to other apps (e.g. the position of the GPS receiver to TRACK-Leader or SECTION-Control) or to a connected ISOBUS job computer (GPS signal as a speed source).

The Tractor-ECU application allows you to:

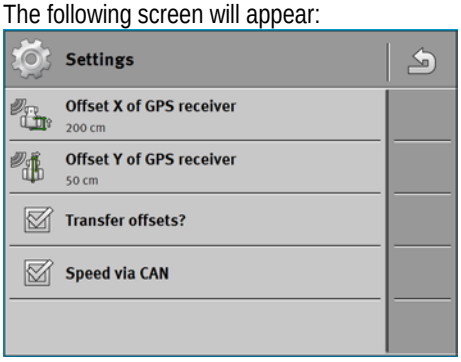
- Input the position of the GPS receiver.
- Define the GPS signal to determine the speed on the CAN bus.

7.1 Setting the GPS receiver parameters

You can configure the GPS receiver parameters on the "Settings" screen.

Procedure

1. - Open the Tractor-ECU application.
   ⇨ The application start screen will appear.
2. Tap "Settings".
   ⇨ The following screen will appear:



3. Tap the relevant button to set the respective parameter.

Parameter

Offset X and Offset Y

When you have mounted and connected the GPS receiver, you must enter its exact mounting position.

In order to enter an accurate position for the GPS receiver, you must measure the distances of the GPS receiver from the longitudinal axis and from the so-called attachment point [➞ 49].

When entering distances, please note that it is essential to specify whether the GPS receiver is to the left or right of the tractor's longitudinal axis and whether it is positioned before or after the attachment point.

What is the position of the GPS receiver?	The distance should be entered as follows
to the right of the longitudinal axis	y
to the left of the longitudinal axis	- y
before the attachment point	x
after the attachment point	- x

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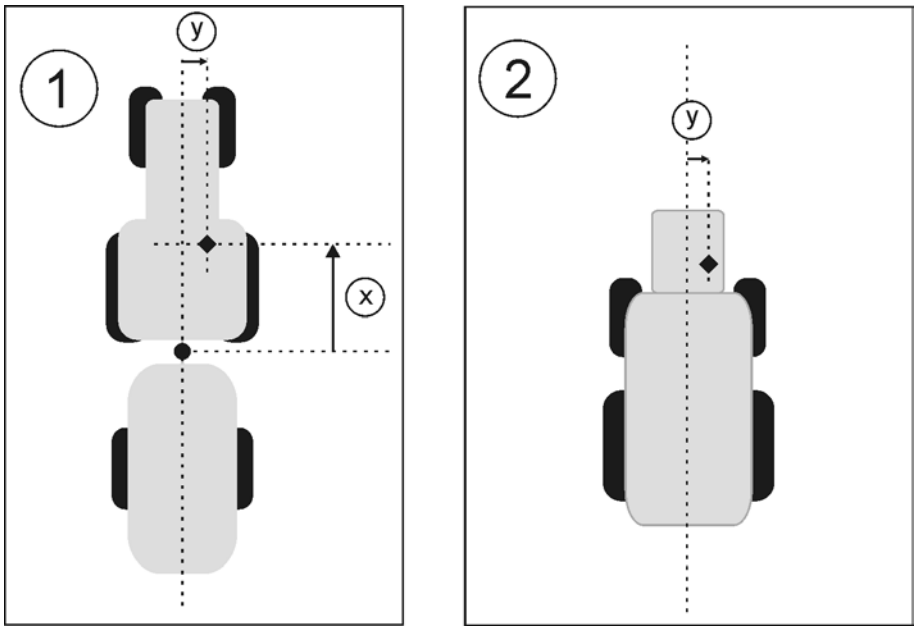

GPS receiver for ISOBUS machines

●	Attachment point for attached or trailed implements	◆	GPS receiver
(1)	Attached or trailed implements	(2)	Self-propelled machines
y	Distance between the longitudinal axis and the GPS receiver for Offset Y	x	Distance for Offset X

Transfer offsets?

This parameter allows you to set whether the position of the GPS receiver is transmitted to the SECTION-Control application.

The parameter must be activated in most instances.

Exception: When the terminal is used as a second terminal, and the GPS receiver is connected to another terminal, it is often necessary to deactivate this parameter.

Speed via CAN

This allows you to set whether you also want to use the speed determined by the GPS receiver and apply this in other applications or ISOBUS job computers. This enables you to replace other speed sensors.

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8 ISOBUS-TC task processing

8.1 Using ISOBUS-TC

The ISOBUS-TC application is an application from Müller-Elektronik which establishes an interface between the ISOBUS job computer, the TRACK-Leader application and the FMIS on the ISOBUS terminal.

With ISOBUS-TC, you can:

- Plan and edit ISO-XML tasks on the terminal,
- Edit ISO-XML tasks which you have planned on the PC using your Farm Management Information System.

All information contained in the task will be transferred by ISOBUS-TC to specialized applications of the terminal. This means that each application is doing exactly what it can do best:

- The position of the field is transferred to FIELD-Nav. It can therefore navigate the terminal directly to the field.
- The field boundaries, guidance lines, prescription maps and other information about processed fields stored in the task are transferred to TRACK-Leader. The field can be therefore processed.
- The target rates are transferred from a prescription map to the ISOBUS job computer. In this way, you do not have to worry about inputting the target rates.
- ISOBUS-TC documents work duration, and the persons, machines and operating means involved.
- Once the work is completed, ISOBUS-TC saves all work results on the USB memory device, so that you can open these again in your Farm Management Information System.

8.2 Adjusting how you use ISOBUS-TC

First of all, you must decide how you will use the ISOBUS-TC application. The operation of ISOBUS-TC and TRACK-Leader is dependent on this setting.

There are two scenarios in which you can use ISOBUS-TC. Use the "Work with ISO-XML?" parameter to set the scenario you will work with:

- "Yes"
  Select this setting if you set up tasks on your PC or if you want to set up tasks on the terminal. In this instance, you must always start a task before you start work. Only then does the data exchange between ISOBUS-TC, TRACK-Leader and the ISOBUS-job computer function.
  You will need a "ISOBUS-TC" license for this.
- "No"
  Select this setting if you do not use tasks. Instead, you use application maps in shp format or enter the application rates directly into the ISOBUS-job computer.
  In this instance, ISOBUS-TC only works in the background. You will not need a license for this. You can also skip the other sections of the instructions regarding ISOBUS-TC.

Procedure

1. - Open the ISOBUS-TC application.
2. Tap "Settings".
3. Tap "Work with ISO-XML?".
4. Tap "Yes" if you want to work with tasks. Tap "No" if you do not want to use tasks or the ISOBUS-TC application.

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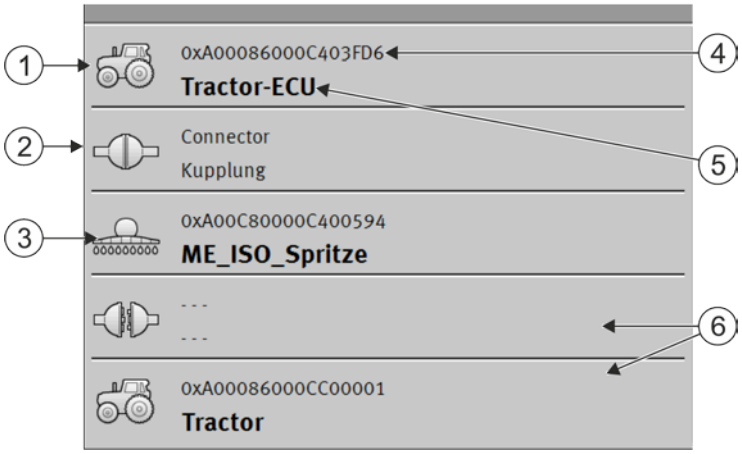
5. - Confirm.
   ⇨ You will be asked whether you want to change the setting.
6. Tap "Yes" if you want to confirm this.
7. Wait until all messages have faded out.
8. Restart the terminal.

8.3 Configuring the list of connection

The list of connection indicates the ISOBUS job computers from which the terminal will load the geometries of the connected devices. This geometry is required in order to calculate the position of all components on the basis of the GPS signal. Only in this way are precise parallel driving and section switching possible.



The farm equipment must be ordered consecutively from the front to the rear when viewed in the direction of travel

1	Tractor job computer icon In this case, it is the Tractor-ECU application of the terminal.	4	ISO number for the ISOBUS job computer
2	There is a connection between "Tractor-ECU" and "ME_ISO_Spritze". - connected implements.	5	Name of the job computer
3	Icon for the "ME_ISO_Spritze" ISOBUS job computer	6	Not all of the equipment in the list must be connected. Job computers which contain no relevant geometric data can be disconnected. In the image, the "Tractor" job computer has been disconnected, as the tractor geometry should be transferred from the Tractor-ECU application of the terminal. - disconnected implements.

Procedure

You can configure the list of connection as follows if you are not using the ISOBUS-TC application:

☑ All ISOBUS job computers are connected to the ISOBUS.

1. - Open the ISOBUS-TC application.
2. Tap "Current task".

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⇨ The "Task" screen will appear.

3. Tap "List of connection".
   ⇨ You have called up the list of connection screen.
   ⇨ A list will appear with all of the equipment connected to the ISOBUS. The connectors appear between the equipment.
4. Tap the task in the top row in order to select the first implement. If you are using an ME terminal to which a GPS receiver is connected, insert the Tractor-ECU application in the top row. If another terminal or tractor job computer contains the geometry, you can set this.
5. The device which is connected to the ME terminal should appear in the second line. Tap the line with the second implement and select one from this.
6. You now only need to select the appropriate connector between the two devices. Tap the line between two devices and select the appropriate connector for each device.
7. - Exit the screen to save the settings.

In simple systems, the terminal can set up the list of connection automatically. In particular, when the ME terminal is the only unit which contains the tractor geometry (see: Configuring the parameters for a vehicle profile)

It can however still be necessary to set the list of connection manually in the following instances:

- If a tractor job computer (Tractor-ECU) in which the tractor geometry is saved is mounted in the tractor cab. In this instance, you must decide which Tractor-ECU will be connected in the list of connection with other equipment: The application on the ME terminal or on the job computer.
- If the system cannot organize the ISOBUS job computer by itself. For example when more than one implement is connected to the tractor (e.g.: slurry tanker and planter/seeder).
- When the connection to an ISOBUS job computer is interrupted during the start-up of a ISO-XML task. In most cases, the list of connection will be set correctly as soon as you reconnect the ISOBUS job computer.
- If this error message appears when starting the terminal: "List of connection is incomplete."
- When the following error message appears when starting a navigation in TRACK-Leader: "The device data is still loading." The settings in the list of connection can eliminate this problem.

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9 Serial Interface application

The "Serial Interface" application is used to enable communication between the terminal and a non-ISOBUS compatible on-board computer.

This interface enables you to use all of the applications together with the GPS signal and the on-board computers, in order to:

- Transfer target rates (using the LH-5000 protocol or the ASD protocol); [➙ 53]
- Switch sections on and off (using the ASD protocol). [➙ 54]

So that you do not need to reconfigure the application each time, you can create an individual profile for each on-board computer.

9.1 Transfer target rates via LH5000

Tested on-board computer*

Manufacturer	On-board computer	Software version	Baud rate
RAUCH	Quantron A	V1.20.00	9600
RAUCH	Quantron E	V3.51.00	9600
RAUCH	Quantron E2	V2.10.00	9600
RAUCH	Quantron S	V3.90.00	9600
RAUCH	Quantron S2	V1.00.05	9600
ME	Spraylight	V02.00.10	9600

* - Only on-board computers on which we were able to determine that the serial interface was functional are listed. Results may differ with different software versions.

Procedure

☑ You have checked whether you need to activate the LH5000 protocol on the on-board computer. If yes, you have activated the protocol.

☑ The "Serial Interface" plug-in is activated.

1. Connect the on-board computer to the terminal. [➙ 18]
2. Start the terminal.
3. - Open the Serial Interface application.
4. Tap "Settings".
5. - Add a new machine profile.
   ⇨ A new machine profile appears on the screen.
6. Configure the parameters as shown in the following steps.
7. "Operating Mode" -> "Target Rate Transfer"
8. "Protocol" -> "LH5000"
9. "Implement type" -> Select the implement with which you are working.

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10. "Baud rate" -> normally "9600". The baud rate is dependent on the on-board computer.
11. - Activate the machine profile.
12. - Press and confirm in order to save the machine profile.
13. Restart the terminal.

Further steps

You have set up the serial interface. You must now configure the applications of the terminal.

In the TRACK-Leader application:

1. Deactivate the "SECTION-Control" parameter under "Settings / General".
2. Create a machine profile for the combination of your tractor and mounted implement.
3. Load a prescription map.

You can load the prescription map in two ways:
- As a shp file, in the TRACK-Leader application.
- As part of a ISO-XML task, if you are using the ISOBUS-TC application and a Farm Management Information System.

For more information, please refer to the TRACK-Leader and ISOBUS-TC operating instructions.

9.2 Switching sections and transferring target rates via ASD

Tested on-board computer*

Manufacturer	On-board computer	Software version	Baud rate	Target rate transfer	Section control
Amazone	Amatron3	V1.09.00	19200	+	-
Amazone	Amatron+	V3.23.00	19200	+	-
RAUCH	Quantron A	V1.20.00	19200**	-	+
RAUCH	Quantron E	V3.51.00	19200**	+	+
RAUCH	Quantron E2	V2.10.00	19200**	+	+

* - Only on-board computers on which we were able to determine that the serial interface was functional are listed. Results may differ with different software versions.

** - "GPS-Control" must be activated on the on-board computer

You can use the ASD protocol to transfer target rates to a prescription map or to switch sections. The degree to which you can use these functions will depend on the on-board computer.

In order to be able to perform transfers using the ASD protocol, you will need to activate the "ASD-Protocol" license.

Procedure

To configure the serial interface in order to switch sections using your on-board computer:

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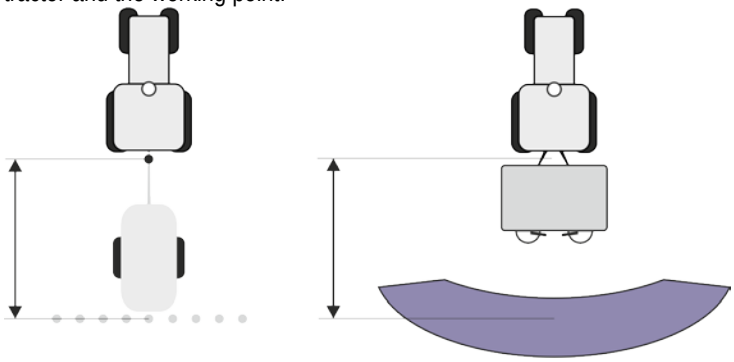
☑ You have activated the "SECTION-Control" parameter in the "General" menu of the TRACK-Leader application.

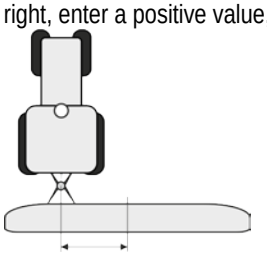
☑ You have checked whether you need to activate the ASD protocol on the on-board computer. If yes, you have activated the protocol.

☑ The "Serial Interface" plug-in is activated.

1. Connect the on-board computer to the terminal. [➙ 18]
2. Start the terminal.
3. - Open the Serial Interface application.
4. Tap "Settings".
5. - Add a new machine profile.
   ⇨ A new machine profile appears on the screen.
6. Configure the parameters as shown in the following steps.
7. "Operating Mode" -> "Section control"
8. "Protocol" -> "ASD"
9. "Implement type" -> Select the implement with which you are working.
10. "Tractor<-->Working point" -> Here, enter the distance between the suspension point of the tractor and the working point.



11. "Offset L/R" - This parameter is used to set the geometry of asymmetrical implements. Here, input the distance by which the middle of the working width should be shifted. For a shift to the right, enter a positive value, and for a shift to the left, enter a negative value.



12. "Working Width" - The working width set in the on-board computer.
13. "No. of sections" - The number of sections set in the on-board computer.
14. - Activate the machine profile.
15. - Press and confirm in order to save the machine profile.

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16. Restart the terminal.

Further steps

You have set up the serial interface. You must now configure the applications of the terminal.

In the TRACK-Leader application:

1. Activate the "SECTION-Control" parameter under "Settings / General".
2. Configure the section switching in "Settings/ SECTION-Control".
3. Load a prescription map.

You can load the prescription map in two ways:

- As a shp file, in the TRACK-Leader application.
- As part of a ISO-XML task, if you are using the ISOBUS-TC application and a Farm Management Information System.

For more information, please refer to the TRACK-Leader and ISOBUS-TC operating instructions.

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10 Fileserver application

The Fileserver application is used to define a save location on the terminal. This save location can be used by all ISOBUS units which do not have their own USB interface. This enables the updating of certain ISOBUS job computers, and also the possibility of saving, for example protocols or error messages.

A "Fileserver" folder is created for this purpose on the hard disk of the terminal. All ISOBUS implements can access this folder, and write or read data there.

The folder has a maximum disk space of 5 MB.

Procedure

☑ If you want to copy files to the terminal, these must be on your USB memory device, in the "Fileserver" folder.

☑ The "File Server" plug-in is activated.

1. - Open the File Server application.
   ⇨ The application start screen will appear.
2. Tap "Storage".
3. - Copy files from the USB memory device onto the terminal (Import).
4. - Copy files from the SD card in the terminal to the USB memory device (Export).
   ⇨ One of the following messages will appear: "Start import?" or "Start export?".
5. To confirm, tap "Yes".
   ⇨ The data will be copied.
   ⇨ Here is an overview of the directories on the USB memory device: Directories on the USB memory device [➟ 29]
   ⇨ A report will appear.
6. To confirm, tap "OK".

⇨ You have successfully imported or exported the data.

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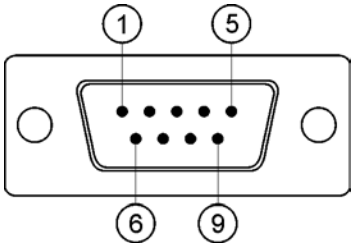
11 Technical specifications

11.1 Technical specifications of the terminal

Operating voltage	10V - 32V
Operating temperature	-30°C - +70°C
Storage temperature	-30°C - +85°C
Dimensions (W x H x D)	345mm x 254mm x 87mm
EMC	ISO14982
ESD protection	ISO 10605:2001 Level IV
Power input	Typical: 15W
	Maximum: 60W
Display	12.1" XGA TFT
In / Outputs	1 x USB 1 x D-sub 9 socket (CAN and power supply) 1 x D-sub 9 plug (RS232) 1 x D-sub 9 plug (RS232) 2 x M12 (Camera) 1 x M12 (Industrial Ethernet) 1 x SMA (GSM antenna)

11.2 Assignment plans

11.2.1 Port A (CAN-Bus)



9-pole D-sub socket

Pin	Signal name	Function
1	CAN_L	CAN_L out
6	-Vin	Supply ground

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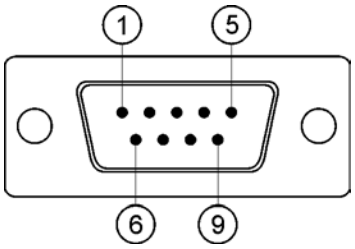
Pin	Signal name	Function
2	CAN_L	CAN_L in
7	CAN_H	CAN_H in
3	CAN_GND	CAN ground, internally connected to the ground
8	CAN_EN_out	Switched input voltage, ≤ 200mA
4	CAN_H	CAN_H out
9	+Vin	Supply
5	Ignition	Ignition signal
Screen	Screen	ESD/EMC shielding

11.2.2 Port B



9-pol. D-Sub connector

Port B is a 9-pin D-Sub port.

The connector can be used for the following purposes depending on its assignment:

Purpose	Pins used
As second CAN interface	7, 9
As second serial interface	2, 3, 4, 5
As signal input for two digital and one analog signal.	1, 5, 6, 8

Pin assignment of port B

Pin no.:	Signal:	Pin no.:	Signal
1	Wheel sensor[1]	6	PTO[2]
2	/RxD2	7	CAN2_H
3	/TxD2	8	Working position sensor[3] or Reverse signal for determining the course
4	Voltage supply for GPS receiver[4]	9	CAN2_L

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Pin no.:	Signal:	Pin no.:	Signal
	Switched input voltage, ≤ 250mA		
5	GND	Screen	ESD/EMC shielding

Legend:

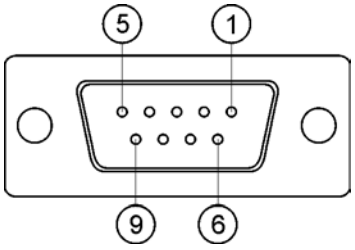
[1]) Digital input as per: ISO 11786:1995 chapter 5.2

[2]) Digital input as per: ISO 11786:1995 chapter 5.3

[3]) Digital input as per: ISO 11786:1995 chapter 5.5

[4]) The pin is switched in parallel with pin 4 by port C. Total loading is 600mA.

11.2.3 Port C (RS232)



9-pole D-sub socket

Pin	Signal name	Function
1	DCD	DCD
6	DSR	DSR
2	/RxD	/RxD
7	RTS	RTS
3	/TxD	/TxD
8	CTS	CTS
4	DTR	Switched input voltage, ≤ 200mA (alternatively DTR)
9	RI	5V (alternatively RI)
5	GND	Signal ground
Screen	Screen	ESD/EMC shielding

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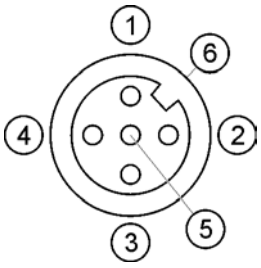
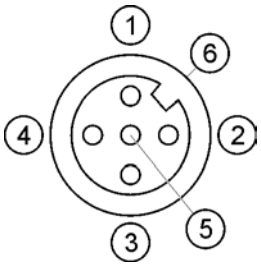
11.2.4 Ports D and E (camera)



M12 socket: Camera

Pin	Signal name	Function
1	Power	Voltage supply, max. 500mA total
2	Power GND	Supply ground
3	FBAS2	Camera
4	FBAS	Camera
5	Signal GND	Signal ground
6	Screen	ESD/EMC shielding

11.2.5 ETH (Ethernet) port



M12 socket: Ethernet

Pin	Signal name	Function
1	TD+	white-orange
2	RD+	white-green
3	TD-	orange
4	RD-	green
5	Pin not present	Pin not present
Screen	Screen	ESD/EMC shielding

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12 Notes

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